



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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Detailed Technical Specifications for Carbonaceous Aerosol Speciation System (CASS)

1.	Measuring Parameters	Light absorbing carbonaceous aerosols like Black carbon (BC), Total and Organic carbon (TC & OC)
2.	Technique	1. Appropriate and established thermo-optical techniques to be utilized 2. Deployed technique should be free from sampling artefacts such as interference in optical measurements due to aerosol loading
3.	Time resolution	Real-time, online measurements of different parameters; from tens of seconds to a few tens of minutes, one measurement of all the parameters are taken at every 30 min or less
4.	Offline measurement capability	Offline mode to analyse previously – collected samples for determination of one or more parameter
5.	Source apportionment	A quick, preliminary source identification of absorbing carbonaceous aerosols
6.	Detection limit	Detection limit for BC (1 hour) <0.006 $\mu\text{gC}/\text{m}^3$. Detection limit for TC (1 hour) < 0.12 $\mu\text{gC}/\text{m}^3$.
7.	Sensitivity	Sensitivity for Black carbon < 0.035 $\mu\text{gC}/\text{m}^3$. @ 1 min and 5 SLPM Sensitivity for Total carbon < 0.55 $\mu\text{gC}/\text{m}^3$ @ 16.7 SLPM
8.	Detection range	For Total carbon <0.035 $\mu\text{gC}/\text{m}^3$ to > 300 $\mu\text{gC}/\text{m}^3$ For Black carbon < 0.012 $\mu\text{gC}/\text{m}^3$ to > 100 $\mu\text{gC}/\text{m}^3$ Black Carbon
9.	Sample flow rate	For Total carbon > 15 LPM For Black carbon > 4 LPM
10.	Measurement time base	Should be user selectable from a few tens of seconds or less to a few tens of minutes or more
11.	Construction	Rugged construction with sturdy and durable materials. Minimum use of fragile/glass materials. Suitable for field deployment.
12.	Carrier gas	Ambient air, complete avoidance of costly commercial grade carrier gases
13.	Operation interface	Digital, touch screen, measurement values should be displayed

14.	Data output & storage	Digital via RS-232 COMport and Ethernet Network ready remote management
15.	Power supply	100-230VAC,50/60Hz (Auto-switching) Power consumption 700Watts or less
16.	Dimensions	< 80 x 50 x 60 cm
17.	Publications	The quoted equipment must be well established with atleast one peer reviewed journal publication in a reputed international journal in the field aerosol/air pollution
18.	After sales support	Supplier/vendor should have trained engineers/technician to provide comprehensive after sales support
19.	AMC	Atleast 3 years AMC
20.	Warranty	Atleast 3 years Warranty
21.	Installation and Training	The supplier/vendor should arrange a comprehensive training during the installation